

Fig. 1

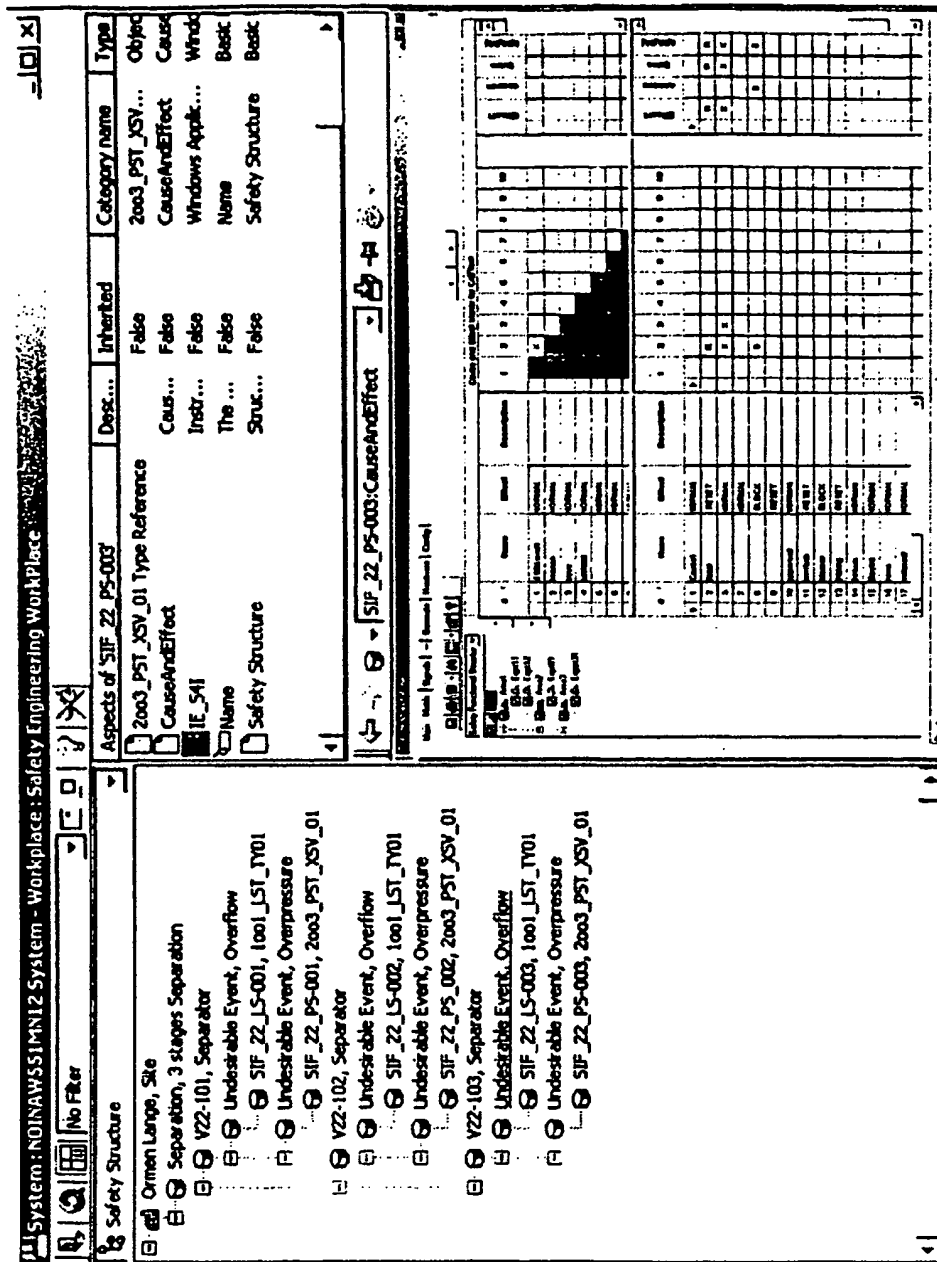


Fig. 2

1

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

User Login

User name:

Password: ☒ Use Windows Logon Security

Server:

2

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Cause & Effect Matrix

Select Matrix

AAA

3

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant

Area1

Fig. 3

4

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant
Area1

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								

#	Name	Description	Designation	1	2	3	4	Effect
1	Cause1		ZCAU1	X				X
2	regsis							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

5a

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant
Area1

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								

#	Name	Description	Designation	1	2	3	4	Effect
1	Cause1		ZCAU1	X				X
2	regsis							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

Create Cause
Delete Effect
Level
Block
Reset
Area or Equipment

Fig. 3 cont.

5b

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Show all
Levels only
Hide levels

Plan

Cause and Effect Matrix for AAA

	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								
1	Cause1		ZCAU1	X				X
2	regsts							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

5c

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Show signals
Hide signals
Collapse signals

Plan

Cause and Effect Matrix for AAA

	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								
1	Cause1		ZCAU1	X				X
2	regsts							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

6

	Name	Description	Designation	1	2	3	4	Effect
1	Cause1		ZCAU1	X				X
2	regsts							
3								
4								
5								
6								

Fig. 3. cont.

6

Cause and Effect Matrix for AAA									
	Name	Description	Designation	1	2	3	4	Effect	
1	ESDI Level1		ZLEV1						X
2									
3									
4									
5									
6									
7									
	Name	Description	Designation	1	2	3	4	Effect	
1	Cause1		ZCAU1	X					X
2	Effects								
3									

7a

CEM Cause: Cause1

Variable 3 Signals

Name: Cause1 Area: Plant

Designation: ZCAU1 Delay (s): 0

Designation:

Active: NORMAL

Latchable: ☐ Blockable: ☐

< Play Next >

Position no: 1

7b

CEM Cause: Cause1

Variable 3 Signals

Input Datatype: bcol Confirmation criteria: 1 Signals out of: 3

Name	Description	Assign	Normal
Samplecolla1	Sample signal	IX0.11.1.1	ND
Samplecolla2	Sample signal	Unassigned	ND
Samplecolla3	Sample signal	Unassigned	ND

Show available signals OK Apply Cancel

Edit Cause 11/2/2003 S 48 Pm

Fig. 3. cont.

7c

CEM Cause: Cause1

Variable

Input Datatype: bcol Confirmation:

Signals		
Name	Description	
Samplecolla1	Sample signal	IX
Samplecolla2	Sample signal	Ur
Samplecolla3	Sample signal	Ur

Hide available signals Hide signals

Signals

CEM Cause: Cause1

Variable

Input Datatype: bcol Confirma

Sig		
Name	Description	
Samplecolla1	Sample signal	
Samplecolla2	Sample signal	
Samplecolla3	Sample signal	

Hide available signals Hide si

Edit Cause

8a

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

Fig. 3 cont.

8b

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant
+ Area1

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effekt
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								

#	Name	Description	Designation	1	2	3	4	Effekt
1	CAU1		ZCAU1	X				X
2	reqsts							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

8c

#	Name	Description	Designation	1
1	ESDLevel1		ZLEV1	
2				
3				
4				
5				
6				
7				

#	Name	Description	Designation	1
1	reqsts			
2				
3				
4				
5				

Fig. 3 cont.

9

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effekt
1	ESDLevel1		ZLEV1	10				X
2				10				X
3				10				X
4				10				X
5				10				X
6				10				X
7				10				X
8				10				X
9				10				X
10				10				X
11				10				X
12				10				X
13				10				X

Plant
 Areal1

10

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Digital Signals

Name	Description	Assign	Normal Value
SampleboofIn1	Sample signal	IX0.11.1.1	ND
SampleboofIn2	Sample signal	Unassigned	ND
SampleboofIn3	Sample signal	Unassigned	ND
SampleboofOut4	Sample signal	Unassigned	ND
SampleboofOut5	Sample signal	Unassigned	ND
SampleboofOut6	Sample signal	Unassigned	ND

Digital Analog

Fig. 3 cont.

10

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

				Digital Signals
Name	Description	Assign	Normal Value	
SampleboolIn1	Sample signal	IX0.11.1.1	ND	
SampleboolIn2	Sample signal	Unassigned	ND	
SampleboolIn3	Sample signal	Unassigned	ND	
SampleboolOut4	Sample signal	Unassigned	ND	
SampleboolOut5	Sample signal	Unassigned	ND	
SampleboolOut6	Sample signal	Unassigned	ND	

11

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CemController

IP Address: 172.16.0.0

Controller Type: AC 800M HI Create

Controller Hardware Units

- CemController.0
 - ModuleBus

12

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CemController

IP Address: 172.16.0.0

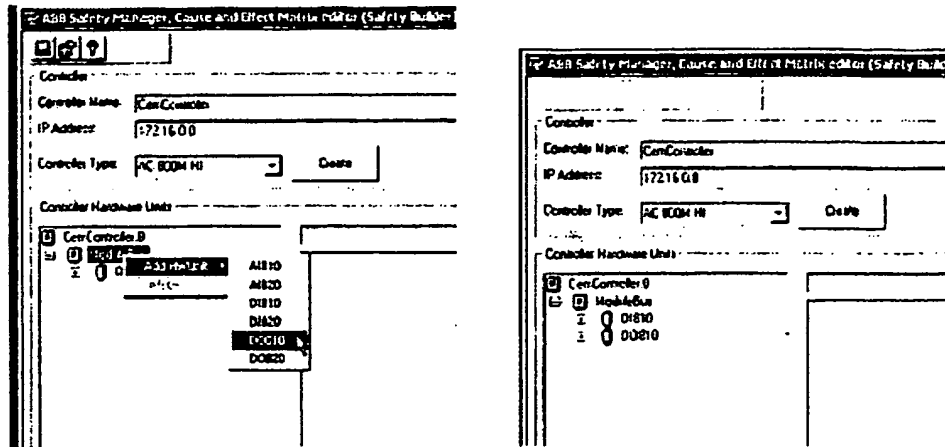
Controller Type: AC 800M HI Create

Controller Hardware Units

- CemController.0
 - ModuleBus
 - AI810
 - AI820
 - DI810
 - DI810
 - DO810
 - DO820

Fig. 3 cont.

13



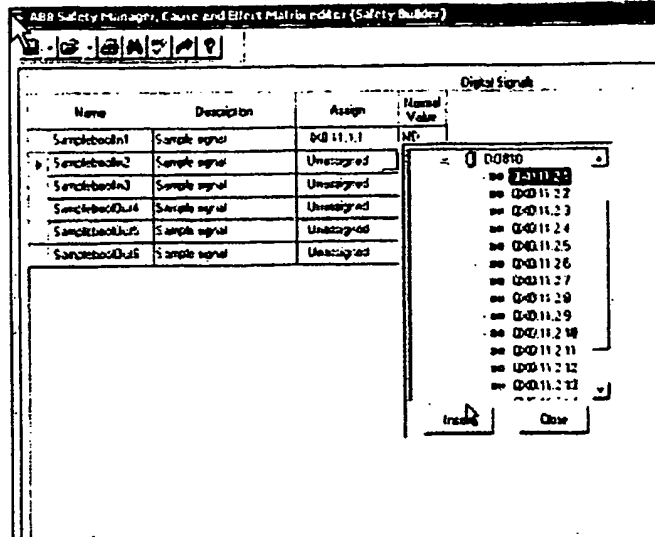
14

ASR Safety Manager, Cause and Effect Matrix editor (Safety Builder)			
Digital Signals			
Name	Description	Assign	Reset Value
Samplebein1	Sample signal	ND11.L1	ND
Samplebein2	Sample signal	Unassigned	ND
Samplebein3	Sample signal	Unassigned	ND
Samplebein4	Sample signal	Unassigned	ND
Samplebein5	Sample signal	Unassigned	ND
Samplebein6	Sample signal	Unassigned	ND

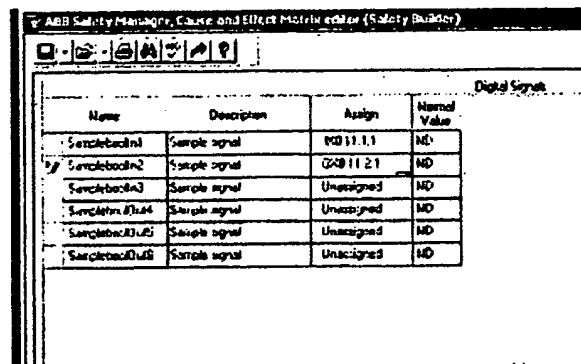
Fig. 3 cont.



Fig. 3 cont.



15c



16

Fig. 3 cont.

17

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CamController

IP Address: 172.16.0.0

Controller Type: AC 800M HI Create

Controller Hardware Units

- CamController.0
- ModuleBus

18

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CamController

IP Address: 172.16.0.0

Controller Type: AC 800M HI Create

Controller Hardware Units

- CamController.0
- ModuleBus

Fig. 3 cont.

19

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Project structure for AAA main:

Project name: CE AAAA
 Application Name: CEM300
 Task Name: CEMTest
 Task Interval (ms): 50

Code Generation Options:

☐ Use Soft Controller IP Addr.
☐ Use Designations only
☒ Skip where no CEM interactions
☐ Direct input to Control Builder

Generation:

Import Data
 New Element
 Edit Element
 Delete Element

20

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Project structure for AAA main:

Project name: Import Controller
 Application Name: Import Application
 Task Name: Import Hardware
 Task Interval (ms): Import All

Code Generation Options:

☐ Use Soft Controller IP Addr.
☐ Use Designations only
☒ Skip where no CEM interactions
☐ Direct input to Control Builder

Generation:

Import Data
 New Element
 Edit Element
 Delete Element

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Project structure for AAA main:

Project name: CE AAAA
 Application Name: CEM300
 Task Name: CEMTest
 Task Interval (ms): 50

Code Generation Options:

☐ Use Soft Controller IP Addr.
☐ Use Designations only
☒ Skip where no CEM interactions
☐ Direct input to Control Builder

Generation:

Import Data
 New Element
 Edit Element
 Delete Element

Fig. 3 cont.

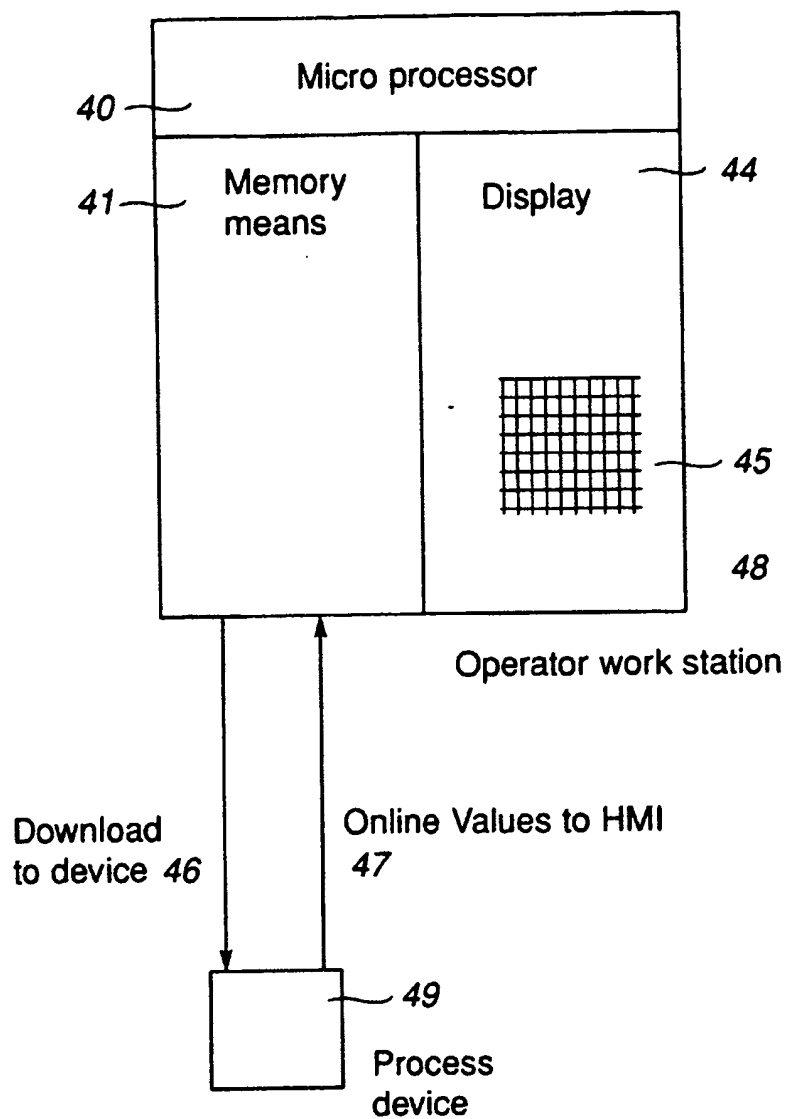


Fig. 4

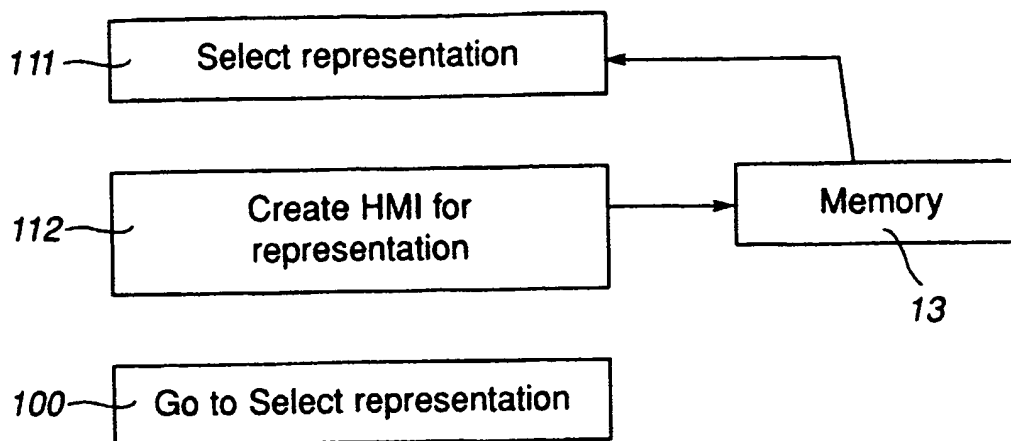


Fig. 5a

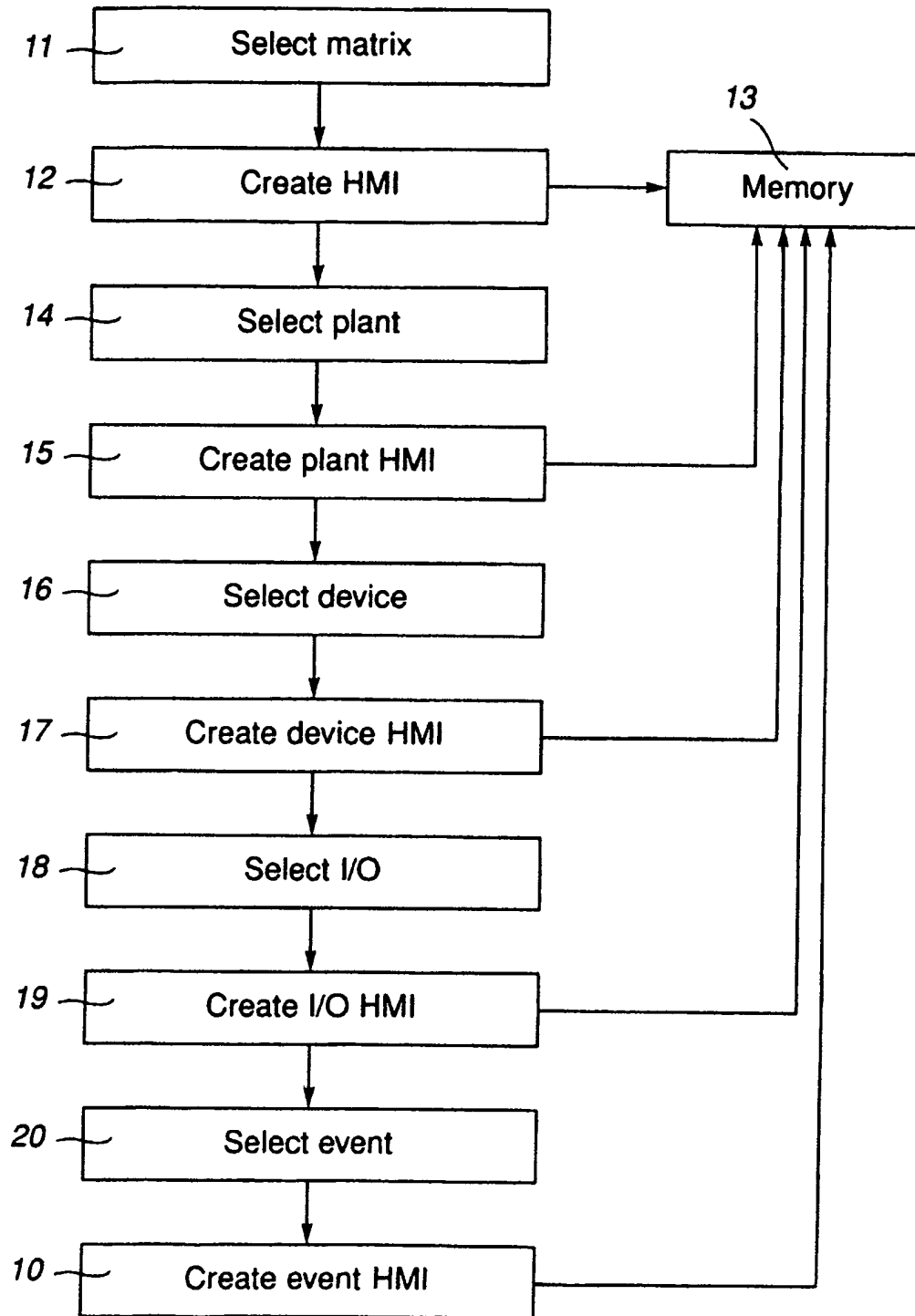


Fig. 5b

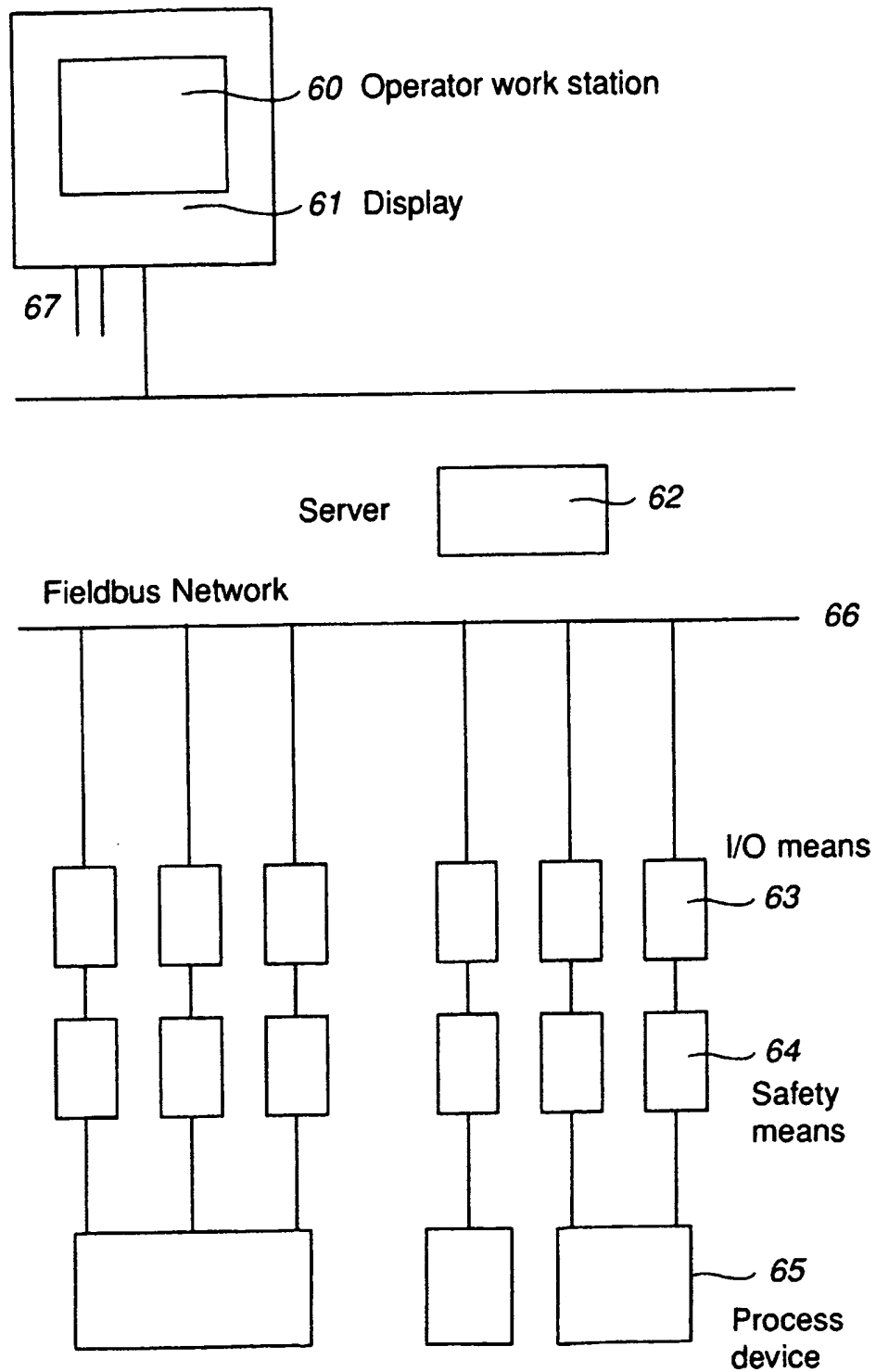


Fig. 6

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